

PURCHASE DESCRIPTION

MODULATOR (7 to 12 GHz)

ML0AA-A

1.0 GENERAL This procurement requires a wideband, high performance microwave modulator which provides square wave, pulse and amplitude modulation over the frequency range of 7 to 12 GHz.

2.0 CLASSIFICATION The pulse modulator described herein shall meet the requirements of MIL-T-28800(), Type III, Class 5, Style E, Color R for Navy shipboard, submarine, and shore applications with the following exceptions:

a. The non-operating temperature requirement is limited to the range of -40°C to +70°C.

b. The relative humidity requirement is limited to 95% noncondensating.

c. The operating and non-operating altitude requirements are not invoked.

d. The Electromagnetic Interference requirements of MIL-T-28800 are limited to CE01, CE03, CS01, CS02 (0.05 to 100 MHz), CS06, RE01 (back panel search excluded), RE02 (14kHz to 1 GHz), and RS03.

3.0 OPERATIONAL REQUIREMENTS The equipment shall be capable of producing signals within the parameters and accuracies specified herein.

3.1 Frequency

3.1.1 Range: At least 7 to 12 GHz

3.1.2 Insertion Loss: Less than 10 dB

3.2 Modulation

3.2.1 Internal

3.2.1.1 Square Wave

3.2.1.1.2 Frequency: At least 50 Hz to 50 kHz

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- 3.2.1.1.3 Symmetry: At least 45/55%
- 3.2.1.2 Pulse
- 3.2.1.2.1 ON/OFF Ratio: At least 80 dB
- 3.2.1.2.2 Repitition Rate: At least 50 Hz to 50 kHz
- 3.2.1.2.3 Delay: Variable from 0.1  $\mu$ s to 100  $\mu$ s between sync  
and RF output pulses
- 3.2.1.2.4 Pulsewidth: Variable from 0.1  $\mu$ s to 100  $\mu$ s
- 3.2.1.3 External Sync
- 3.2.1.3.1 Signal: 5 to 20 volts peak, + or -, pulse or sine  
wave
- 3.2.1.3.2 Input Impedance: 2 kohms nominal

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- 3.2.1.4 Trigger Out
  - 3.2.1.4.1 Sync Out: Simultaneous with or 0.1 to 100  $\mu$ s in advance of RF pulse controlled by delay setting
  - 3.2.1.4.2 Delayed Sync Out: Simultaneous with output pulse
  - 3.2.1.4.3 Amplitude: At least -2 volts nominal
- 3.2.2 External
  - 3.2.2.1 Pulse
    - 3.2.2.1.1 Amplitude: At least 5 to 20 volts peak, + or -
    - 3.2.2.1.2 Repetition Rate: Maximum PRF at least 500 kHz/s
    - 3.2.2.1.3 Input Impedance: 2 kohms nominal
    - 3.2.2.1.4 Pulse Width: 0.1 $\mu$ s minimum
  - 3.2.2.2 AM
    - 3.2.2.2.1 Frequency Response: dc to 1 MHz (3 dB)
    - 3.2.2.2.2 Sensitivity: 20 dB/volt
    - 3.2.2.2.3 Input Impedance: 1 kohm nominal

#### 4.0 GENERAL REQUIREMENTS

4.1 Power: 115/230 Vac  $\pm$ 10%, single phase, 50, 60 or 400 Hz  $\pm$ 10%, 10 W maximum

4.2 Calibration Interval: The calibration interval shall be 12 months minimum. The equipment shall be within all accuracy requirements specified herein, with a 72% or greater confidence factor following a calibration interval of 12 months.

4.3 Dimensions: The total volume of the unit shall not exceed 1155 in<sup>3</sup> (19054 cm<sup>3</sup>).

4.4 Weight: The total weight of the unit shall not exceed 16.5 lb (7.4 kg).